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DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

Yellowstone NATIONAL PARK

FILE No. 143

MONTHLY REPORT

NOVEMBER, 1924.

NOVEMBER-1924

December 6, 1924.

Dear Sir:

The following is my report on conditions in Yellowstone National Park for the month of November 1924:

I. GENERAL CONDITIONS

Weather

The following records are quoted from the report for November of the Observer in charge of the local United States Weather Bureau at Mammoth Hot Springs, Park Headquarters:

The month was cold and interspersed with stormy and sunshiny days, the former predominating.

TEMPERATURE: Monthly mean, 27.1° , is 2.2° below normal. Except for a few days at the beginning of the month and the latter half of the third week, the temperature was considerably colder than normal. No unusual extremes of temperature occurred, the highest being 59° on the 2nd and the lowest 2° below zero on the 13th.

PRECIPITATION: Total, 2.23 inches, is 0.79 inch above normal, and the greatest, with one exception, for the past 13 years. There were two marked storm periods -- one from the 4th to the 13th and the other from the 19th to 25th. Precipitation was mostly snow.

SNOWFALL: Total 18.4 inches; normal 10.8 inches. During the past 20 years there have been but two Novembers with a greater amount of snowfall. Snow fell on 15 days of the month, which is the greatest record for November. The greatest depth of snow on the ground was 9.0 inches on the 12th, while there were 6.0 inches at the end of the month.

WIND: Average hourly velocity 9.0 miles; normal 8.0. Maximum velocity was 40 miles per hour from the south on the 4th.

SUNSHINE: Percentage of possible 46; normal 48.

General Road & Trail Conditions

Road conditions during the month between Gardiner and Mammoth were very good. The auto mail stage between Gardiner and Cooke City operated on regular schedule up to and including the 23rd. After that date it was operated as far as Soda Butte Cabin, the mail being relayed from that point to Cooke City by horse-drawn vehicle.

Travel

Park travel during the month consisted chiefly of persons traveling between Gardiner and Mammoth Hot Springs. All gateways except the north being closed to travel, no accurate account of travel is now kept at the north gate as the rangers stationed at that point have been assigned to game patrols. However, a total of 42 visitors are known to have entered that gateway. With the pre-season total of 553, the total of 595 is compared with 1005 for the same date last year.

II. ADMINISTRATION OF THE PARK.

Personnel

On November 1 there were 65 employees on the payrolls, and on November 30 there were 64. The following list shows the number of appointees of various classes serving during the month, with a general statement of the kind of work in which they were engaged:

<u>No.</u>	<u>Class</u>	<u>Kind of Work Performed</u>
1	Superintendent	General administration and supervision of all activities in the park.
2	Asst. Superintendents	1 in charge of administration, purchasing, disbursing; 1 in charge of property, equipment, transportation, cost accounts, inventories, etc., also acting as assistant to Superintendent in capacity as Field Assistant to the Director.
2	Asst. Engineers	1 in charge of engineering work; 1 assisting.
6	Clerks	1 Cost Accounting Clerk; 1 Personnel and File Clerk; 1 Clerk on orders, proposals and vouchers, and assisting with time-keeping and payroll work; 2 stenographer typists on stenographic work for Superintendent.
3	Electricians	Operated power plant regular shift, including Sundays, read meters, did necessary line work.
3	Foreman	1 in charge of headquarters corral and freighting work about headquarters; 2 on road cleanup work, and on sewerage system at Sylvan Pass lodge; also worked in shops.

<u>No.</u>	<u>Class</u>	<u>Kind of Work Performed</u>
3	Telephone switchboard operators	One operated telephone switchboard daily shift, including Sunday; two temporary WAE operators for intermittent service.
1	Master Mechanic	In charge of shops and of repair to heavy road machinery.
2	Blacksmiths	General blacksmith work, including shoeing of horses in shop, repairing tools and equipment.
1	Master Plumber	In charge of general plumbing and water and sewer systems.
2	Auto Mechanics	1 on duty in power plant; 1 on repair work.
3	Laborers	Teaming, freighting, assisting mechanics and miscellaneous work at headquarters (one appointed and entered on duty Nov. 1, 1924.)
1	Steward & Master of Transportation	In charge of all transportation and of storehouses.
1	Chief Buffalo Keeper	In charge of tame buffalo herd.
1.	Asst. Buffalo Keeper	In charge of hay ranch operations at Slough Creek.
1	Buffalo Herder	Assisting buffalo keeper.
1	Park Naturalist	Scientific research work and developing museum.
1	Chief Park Ranger	In charge of ranger force.
1	First Asst. Chief Ranger	In charge of Northern District.
2	Assts. Chief Park Rangers	1 on duty at Lake District; 1 in charge of Western Supervisory Territory.
26	Park Rangers (18 WAE)	Patrolling, protecting game, fire lookout and miscellaneous duties.
4	Park Rangers (temporary -3 WAE)	Patrolling, protecting game, and miscellaneous duties.

Leaves of Absence

Herbert G. Chappelaar, Clerk, November 1-6, 5 days.
Edmund J. Sawyer, Park Naturalist, November 3, 1 day.
William I. Davis, Asst. Engineer, November 1, 1 day.
Charlie R. Stinnett, Blacksmith, November 1-8, 7 days.
James H. Dupuis, Park Ranger, November 1, 1 day.
August C. Neumann, Master Painter, November 12 (n) - 13 (n), 1 day.
John Bauman, Park Ranger, November 4-7, 4 days.
Birt Vink, Blacksmith, November 4 (noon), 1/2 day.
Edmund J. Sawyer, Park Naturalist, November 22, 1 day.
Robert R. Robinson, Jr., Auto Mechanic, November 18-21, 4 days.
Bert L. Stinnett, Master Mechanic, November 28-29, 2 days.
Julia B. Stockett, Clerk, November 22 (noon), 1/2 day.
Burton C. Lacombe, Chief Buffalo Keeper, November 24-29, 5 days.
Robert R. Robinson, Auto Mechanic, November 24 (noon)-25, 1-1/2 days.
Andrew R. Edwin, Clerk, November 17 (noon), 1/2 day.
C. W. Enochs, Foreman, November 18-22, 5 days.
W. J. O'Loughlin, Laborer, November 17-18, 2 days.
Charles D. Dale, Electrician, November 19-22, 4 days.
Anna E. Madsen, Clerk, November 24, 1 day.
Erl A. Allan, Electrician, November 11-12, 2 days.
August C. Neumann, Master Painter, November 19, 1 day.

Sick Leave:

Charlie R. Stinnett, Blacksmith, November 15-22, 8 days.
Deate T. White, Foreman, November 28-30, 3 days.

Leave Without Pay:

Daniel W. Tripp, Laborer, at \$1440 per annum and quarters, Nov. 1-30, 1924.
Herbert G. Chappelaar, Clerk at \$1680 per annum and quarters, Nov. 7-30, 1924.
Deate T. White, Foreman, at \$2100 per annum and quarters, Nov. 1-15, 1924.

Appointments

Park Rangers: (WAE)

Joseph H. Nortman, \$1500 per annum and quarters, entered on duty Nov. 1, 1924.
Herschel R. Bowman, \$1440 per annum and quarters, entered on duty Nov. 1, 1924.
David Earl Andrew, \$1440 per annum and quarters, entered on duty Nov. 1, 1924.
Edward J. Bruce, \$1440 per annum and quarters, entered on duty Nov. 1, 1924.

Mrs. Aleda Joffe, Telephone Operator, temporary, at \$1140 per annum and quarters, WAE, entered on duty November 1, 1924.
Mrs. Elizabeth B. Allen, Telephone Operator, temporary, at \$1140 per annum and quarters, WAE, entered on duty November 1, 1924.
Charles Green, Laborer, at \$1440 per annum and quarters, entered on duty Nov. 1.

Resignations

Herbert G. Chappelaar, Clerk at \$1680 per annum and quarters, effective at the close of November 30, 1924.

Office Force Activities

1138 pieces of official mail were received during the month of November and 1272 were sent out.

Finances

Costs of Operation, etc.: The cost of operating the park for the month of November, 1924, will be shown on the Monthly Cost Accounting Report which will go forward as soon as prepared.

Revenues:

Sale of automobile permits.....\$ 45.00

Sale of Electricity:

Certified check #966, dated Nov. 28, 1924, drawn by H. W. Child on the National Bank of Montana, Helena, Mont., to the Director, National Park Service, amount... 13.62

Certified check #705, dated Nov. 12, 1924, drawn by Vernon Goodwin on the National Bank of Montana, Helena, Mont., to the Director, National Park Service, amount..... 2.60

Certified check #338, dated Nov. 12, 1924, drawn by J. E. Haynes on The First National Bank of St. Paul, St. Paul, Minn., to the Director, National Park Service, amount..... 1.50

Certified check #418, dated Nov. 16, 1924, drawn by George Whittaker, on The National Park Bank, Livingston, Mont., to the Director, National Park Service, amount.....26.85

Money Order #59134, dated Nov. 14, 1924, drawn by the Postmaster at Yellowstone Park, on the Postmaster at Washington, D.C., amount, ~~Prayer & Frischman~~..... 4.66

Sale of buffalo meat:

Certified check #286, dated Nov. 15, 1924, drawn by Retallick & Baumgart, to the Director, National Park Service, amount.....100.00

Total \$194.23

Plans, Maps and Surveys

As no field work was in progress during the month the two assistant engineers devoted their time to general office work, making plans for new bridges and culverts, working up the notes of survey made last fall, also maps and profiles of same.

Report on Commissary and Transportation

The storehouses are being cleaned and put in orderly condition, preparatory to taking inventory next month.

Six truck drivers hauled practically forty carloads of hay and oats from Gardiner to headquarters; 15 cords of wood were hauled from Bunsen Peak to be used as fuel, and coal was hauled from Gardiner.

III. MAINTENANCE OF IMPROVEMENTS AND FACILITIES

Grounds

The foreman in charge of grounds at headquarters supervised the work of freighting about headquarters, hauling of garbage, ice, coal, wood, etc., and the care of the stable.

Electrical and Telephone Systems

Work in the department consisted chiefly of work in the Power Plant, and some minor electrical work at headquarters. Wiring was nearly completed in the new ranger station at Gardiner, which is being erected by the Yellowstone Park Transportation Company.

The Power Plant was operated in the usual manner. It was run constantly with the results shown in comparison for November, 1923, as follows:

	<u>1923</u>	<u>1924</u>
Total current generated in KW hours	38,050	48,890
Of this, sold to public utilities at 5¢ per KWH	4,329	3,703.5
Consumed for street lighting	2,061	2,082.
Balance, consumed in government buildings, for power and lighting, and lost on lines in transit	32,071	43,104.5
Peak load during month in KWH	84	102

The Telephone and Switchboard Office was open daily from 7:30 A.M. to 8:30 P.M. The total business handled was as follows:

	<u>1923</u>	<u>1924</u>
On Government local lines	3,132	4,248
On Hotel Company lines	210	634
Long Distance Connections	155	177
	<u>3,497</u>	<u>5,059</u>

Water and Sewer Systems

The Master Plumber with four helpers spent the entire month in installing a heating plant in Bilkert's quarters, and plumbing fixtures in the new ranger station at Gardiner. The usual amount of maintenance work was done on water and sewer systems at headquarters.

Machinery and Equipment

The following work was done in the garage; two F.W.D. trucks overhauled; 1 one-ton Ford truck overhauled; and freight trucks were repaired. Work was commenced on the building of six new truck bodies to be placed on old freight trucks.

The Blacksmith overhauled seven graders. Ranger and work horses were shod as became necessary.

The Master Painter spent the entire month in painting equipment. Forty dump wagons were cleaned and painted.

Landscape Work

Because of heavy snowfall and generally unfavorable weather conditions, the roadside cleanup work was discontinued November 8th. It is very much regretted that this action was necessary as another ten days of good weather would have seen the completion of this undertaking between Mammoth and Apollinaris Spring.

On the Mammoth-Golden Gate section there remains but 1/4 of a mile of heavy cleanup, between the pond on the lower side of the road and the Hoodoos. From Golden Gate to the Beaver Dam, which is 10.2 miles from Mammoth, the cleanup is finished except a little near the Gardiner River bridge, amounting to about one-tenth of a mile.

On this section of 10.2 miles there was estimated to be 3.1 miles of light and 1.4 miles of heavy cleanup. At the estimated cost per mile the completed work should have amounted to \$3234.00, whereas the final figure was \$3491.72, indicating that either an underestimate was made of the cost per mile of the different classes of clearing, or, which is more likely, sections classed as light should have been placed in the heavy class.

It might be well to embrace in this report a narration of the method used, and general procedure in conducting this roadside cleanup work.

A certain wealthy man visited the Park this past summer and was so favorably impressed with the possibilities of increasing the natural beauties of the Park by cleaning the roadsides of dead and fallen timber, stumps and other debris, that he offered to personally defray the expense of cleaning up a section of roadway.

A small crew consisting of a foreman, seven men and two teams was organized and on September 13th work began on a particularly heavy section between the 8 and 9 mile posts from Mammoth on the Norris road. The teams were used to drag the larger logs to open places where piles were made for burning. The crew was also provided with a truck on which all smaller logs and stumps were hauled away to piles. Because of the generally dry condition of the forest at this time no attempt was made to burn any of the piles until about October 10th, after a snowstorm which eliminated all danger of forest fires. When forming the piles an effort was made to place with the large logs a proportionate amount of small inflammable material, but even so the fire sometimes burned out, leaving the large logs only partly burned. It was then learned that by making very large piles of these logs fire could be retained until they were entirely consumed.

Where the danger of fire was over it was no longer necessary to haul the debris long distances for burning. Fires were made in the road and among the trees wherever space could be found, and it was astonishing how close to trees fires could be built without injury to them. This greatly expedited the work. Many logs so rotten as to fall apart were thrown into piles with forks and burned without further handling.

On October 10th another crew was organized for work on the Mammoth end of the section. This crew worked until November 8th and averaged ten men and six teams besides the foreman. The time of this crew was given mostly to removing and burning the hundreds of stumps that covered the ground both sides of the roadway between Mammoth and Golden Gate. Usually two teams pulled the stumps while two others hauled them to piles for burning. As the ground was too steep for use of wagons or trucks, light stone-boats were made and used to good advantage gathering and hauling stumps. It was found that most of the stumps could be pulled with teams. Those that could not, however, were blasted out. In the open, TNT was used, but where there was danger of this explosive injuring green trees, 40 per cent dynamite was used instead. As the stumps were dry and contained considerable pitch they burned readily. Most of the time of two men was required to tend fires, ignite the piles and repile when they were about burned out.

At one place just below Golden Gate there were a great many dead standing trees. An attempt was made to pull these over with a team by attaching one end of a long rope to the tree about two-thirds of the way up to secure leverage. The experiment was abandoned, however, as too much time was required to attach the rope, and in many cases the strength of the tree proved to be greater than that of the team. The trees were then felled in the usual way and stumps blasted out.

When this work is resumed next year there are two things in particular that should be borne in mind if the best results are to be obtained for money expended. First: make a complete cleanup as the crew moves along; fall all dead trees, remove stumps, pile everything and burn.

When a crew is brought back to fall trees or blast out stumps after a section has been cleaned it means extra work, piling and burning debris that could just as well have been handled the first time. Second: make piles close together and smaller. Ignite them as soon as started and add to as the cleanup progresses. Large logs must necessarily be dragged onto the roadway or other open places but all brush, stumps and small and rotten logs should be burned almost where they lie.

The wonderfully improved appearance of the roadsides where they have been cleaned should cause no little favorable comment next season, particularly when they are seen in contrast with uncleared sections. Yellowstone is indeed fortunate in having such an interested friend, who has the means as well as the inclination to consummate this improvement.

IV. CONSTRUCTION OF IMPROVEMENTS

Water and Sewer Systems

Sewer System - Cody Lunch Station:

The sewer system which is to serve the new Cody Lunch Station at the East Entrance was completed November 15th and the crew disbanded. As Sylvan Pass was closed by snow a truck was hired in Cody and the crew taken out that way. All camp equipment and tools were stored at Sylvan Pass Station for spring use.

Connections were made with the drains from the building and the entire system is in readiness for operation without further work, although it may be necessary to place more covering on the pipe as the ground was frozen and sufficient material for back-filling was difficult to get.

During the progress of the work there was considerable snow and generally unfavorable weather conditions; in spite of that, however, it is pleasing to note that the job was completed well within the estimate given the Camps Company.

Improvements by Park Utilities

The Yellowstone Park Transportation Company is continuing construction work on its new garage and storage unit just inside the North line. A complete report of progress made will be given in the December report.

V. PROTECTION DEPARTMENT

Snow Depths

Reports from the various ranger stations indicate the following snow-depths at this time and for comparative purposes the snow depths for November 30th, 1923, are also given herewith:

	<u>1923</u>	<u>1924</u>
Crevice station	4 inches	14 inches
Canyon		20 "
Gallatin Station	8 "	
Hellroaring Station	3 "	10 "
Lake Station	8 "	13 "
Mammoth		6.5 "
Riverside Station		12 "
Snake River Station		17 "
Sylvan Pass Station	6 "	6 "
Soda Butte (Upper Station)		13 "
Tower Falls Station	3 "	6 "
Upper Slough Creek Station		12 "

The greatest reported snow depth at this time is 4 feet on the Pebble Creek Divide. Eight inches of snow is reported to have fallen in one day at Snake River, namely, November 25th. The lowest temperature thus far reported occurred at Riverside on the night of the 25th when the thermometer registered 23 below zero. Zero and near zero weather generally prevail at nighttime on all the higher elevations, particularly at Lake, Canyon, Riverside, Gallatin and Buffalo Ranch.

Patrols

Chief Ranger Woodring has made patrols into the Northern and Western Supervisory Territories during the month and has also made two extensive patrols of the antelope range. First Assistant Chief Ranger Trischman has been on game patrols along the north line throughout the month, most of his time being spent in the Crevice and Hellroaring districts. Assistant Chief Ranger Douglas and Carter have their respective headquarters at Lake and Riverside and have made their usual tours of inspection during the month. The regular patrol to the Upper Yellowstone country was made from the 5th to the 10th inclusive. Special game patrols have been discontinued in the southern and western Supervisory territories following the close of the hunting season in adjacent territory but barring action pursuant to the emergency clause of the Montana game laws, the hunting season on the North line will not close until December 20th, so the special game patrols that have been constantly maintained in the northern district throughout the month will be continued until the hunting season is closed.

Wild Animals

Game conditions except for the elk are very satisfactory; forage is plentiful but has not been easily accessible during the closing week of the month on account of a crusted condition of the snow.

Elk: The elk have been more or less restless throughout the month with a tendency to drift despite abundant forage and generally fair weather. However, their movements were not such as to cause serious apprehensions except during the past week. The crusted condition of the snow during the past several days has materially reduced the supply of accessible forage and the drift to the lower elevations is more pronounced each succeeding day. Chief Ranger Woodring counted more than a thousand elk along the old road between Mammoth and Gardiner on the 24th. There are large bands in Crevise and Cottonwood Basins, and all along the river from Hellroaring to Crevise Gulch. Over 400 head have passed beyond the park boundaries and hunting is reported to be good in the Cedar Creek and Corwin Springs district. Two large bulls were recently loaded on the train at Eligant. Hunters are numerous in the Crevise mountain and Hellroaring districts and park rangers are in constant touch with the situation. Efforts are being made to secure accurate counts on the numbers of game killed in this district, but the returns to date are very meagre and indefinite owing to the tendencies of hunters to withhold information. Prior to the recent change in weather conditions a total of only 11 were known to have been killed on the North line. Reports on the more recent kills in this district will be withheld until they can be reported with some degree of accuracy. The detail of reported kills by hunters to date is as follows:

Gallatin District	(season)	176
West Yellowstone District	(season)	14
Bechler River District	(season)	10
Sylvan Pass District	(season)	35
Upper Yellowstone District	(season)	7
Gardiner, Hellroaring and Crevise Districts, total to date		11
	Total	253

Losses from accidental and unavoidable causes are reported for the month as follows:

	1 Bull (7 point)	at Buffalo Ranch
	1 Bull (6 point)	near Gallatin Station
	1 Cow	near Buffalo corral, Mammoth
Total	3	which together with 3 reported last month makes a grand total of 6.

Small bands of elk have been recently seen at Morris and along the Gibbon, Firehole and Madison Rivers, and there is a band of about 200 on the headwaters of Gneiss and Cougar Creeks.

Deer: Deer have been recently reported in numbers ranging from 1 to 10 at Sylvan Pass, Canyon, Upper Basin, Madison Junction, West Boundary (Riverside and Grayling Districts), Gallatin District and Buffalo Ranch, together with the usual reports from Hellroaring, Cottonwood, Crevices and Gardiner; the reported losses for the season are as follows:

North line (Gardiner to Hellroaring) total reported	27
Riverside District	2
Sylvan Pass District	25
Upper Yellowstone District	2
Total	<u>56</u>

The total reported season's losses to date from accidental and unavoidable causes is 4. The first observed shedding of horns was noted by Chief Ranger Woodring on the 22nd.

Antelope: The antelope fence was lifted on the 12th and they have since been drifting in and out of the park at will. Their range is patrolled at frequent intervals and a careful count was made by the Chief Ranger and his assistants on the 24th with results reported as follows:

87 were counted on the east side of the Gardiner River (target range and Mt. Everts)

141 were counted on their winter range outside the park

171 were counted on the west side of the Gardiner River (slopes of Sepulchre Mountain inside the park)

399 total.

This exceeds the previously estimated total of 395 by 4 and is not in the opinion of the Chief Ranger a full count of the herd, as he noted signs of a small band near Mammoth which he thinks were not included in the count.

The total reported losses this season to date consists of 1 buck which was killed by coyotes.

The first observed shedding of horns was noted on the 10th.

Moose: Moose are reported from all points; perhaps the most unusual is the reported presence of a bull in Snow Pass (Mammoth District). They are commonly seen on the meadows between Mammoth and Norris and on Pawn Creek and the west Gardiner where it is estimated there are 12 or 15 head at this time. Ranger reports from the Upper Yellowstone patrol advise that a total of 19 were seen at points between Cabin Creek and Thorofare Station. They ranged in numbers from 1 to 3 and were quite widely scattered.

Mountain Sheep: There has been no recent counts on sheep except for the local herd of 19 on Mt. Everts and the season is not sufficiently advanced to get satisfactory counts on any of the herds. However, a full count is intended just as soon as weather conditions arrive that are suited to the purpose. The losses occasioned by hunters - Sylvan Pass District - is reported to amount to 5.

Black Bear: Six are still out on Canyon and seven are out at the Lake. A loss of one has been recently reported from the west side. It was killed by a hunter near the 35 mile post (Gallatin District). This brought the total reported losses occasioned by hunters during the season to 5.

Buffalo - tame herd: The following shipments, pursuant to the authority of the Director, were made during the month:

Mr. J. F. Kirkpatrick, Mayor, Sheridan, Wyo.	2 cows, shipped Nov. 8, 1924.
Mr. M. S. Bailey, Pres., Park Commissioners, Chippewa Falls, Wis.	1 bull) 1 cow)shipped Nov. 8, 1924. 4

The total shipments this season to November 1st was 33 males and 49 females, which together with a shipment of 1 male and 3 females this month makes a total of 34 males and 52 females this season to date; total 86.

There was a further loss to the herd of 2 adults and 3 calves from accidental and unavoidable causes which occurred prior to November 1st, and during the present month one buffalo bull and 2 steers were killed on authority of the Director, the former because of his being in a crippled condition, and the steers were killed for their meat. The miscellaneous losses now total 8, which together with the shipments numbering 86 makes a grand total of 94, and this number deducted from the original total of 780 places the herd total at this time at 686. The herd is in splendid condition.

Buffalo - wild herd: There is nothing new to report on the wild herd at this time.

Small animals: Marten are frequently reported from Lake and Canyon and 4 otter have been recently observed on the Madison River between Madison Junction and Riverside. A marten was recently captured at Canyon, at the instance of the Chief Ranger, with the thought that it might be added to our collection of live animals at Mammoth. However, it lived only a few days and lends color to the argument that they will not live in captivity.

Water Fowl: Ducks and geese are abundant; the most noteworthy report comes from Yellowstone Lake. The rangers from this point advise that there are hundreds of ducks and geese on the Yellowstone River between Lake and Canyon and that 52 swan were recently counted at the outlet of Yellowstone Lake.

Predatory Animals: A mountain lion of very unusual size was captured near Tower Falls on the 27th (Thanksgiving Day). He weighed about 175 pounds and measured 10 ft. and 6 inches in length. This is the first lion to be captured in the park since 1920.

A number of wolf signs were observed in October but only one track has been reported for November. No kills by either of these animals have been observed to date. Coyotes do not appear to be particularly numerous and except for the northern District are not very often seen. They are following very closely the movements of the game and most of the kills have been made in the territory most frequented by game. The total kills to November 1st was 38; the kills for November total 49, making a total to date of 87, and of this number 74 were killed in the Northern Supervisory Territory which comprises the main winter range of the elk, deer, sheep and antelope. The total kills to December 1st, 1923, were 53.

Also it might be remarked that the domestic or house cat has earned for himself the reputation of being a predatory animal and in Yellowstone Park he is considered so, and pursuant to a previously announced policy of extermination a total of 33 have been killed at headquarters during the past month.

Ranch Operations: There is nothing to be specially noted in connection with the buffalo and hay ranch operations during the past month.

Arrests and Violations of Law: There was only one arrest during the month. It occurred on November 25th and was made by Park Ranger Earl S. Bowman. The person arrested was Mr. Thomas E. Doyle of Livingston, Mont. He was charged with the offense of hunting game within the Yellowstone National Park and was promptly arraigned before the United States Commissioner at Mammoth Hot Springs, and upon entering a plea of guilty, and having convinced the Court that he was unwittingly trespassing on park lands, was fined \$25.00 and costs; total \$30.50, which he promptly paid and was released from custody.

Accidents and Casualties: A rather serious accident occurred at a point about 1-1/4 miles below Mammoth Hot Springs on the morning of November 15th. The persons involved were the driver and passengers of Shaw's Cooke City stage. They had left Cooke City at 9 o'clock on the evening of the 14th and arrived at the scene of the accident about 2 o'clock the following morning. The car left the road to the right at a point near the so-called Whiskey Spring. It went down an incline of some 12 or 15 feet and turned over, injuring the driver and all his passengers, - except one - to a greater or less degree. The car was driven by Charles Kent of Gardiner, Mont., and the names and addresses of the passengers have been reported as follows: Mrs. Gilbert Patterson of Long Beach, Calif., Mrs. Harry McDonald and two sons (children) and Mrs. Thomas Harden, all of Cooke City, Mont. Mrs. Patterson, who is 82 years of age suffered the most serious injuries, which are reported to consist of a broken rib and a rather serious scalp wound. She was removed to the Shaw Hotel at Gardiner, Mont., and was afterwards attended by Dr. Crawbuck of Chico Hot Springs, Mont., and Dr. Wolfe of Yellowstone Park, Wyo.

Mrs. Harry McDonald has a few slight cuts and bruises on the head, body, and limbs but is not reported to be seriously injured.

Mrs. Thomas Harden has bruises on the head and face but has no serious hurts.

Kenneth McDonald has a few slight cuts and bruises on the head.

Charles Kent (the driver) was also slightly bruised and injured.

The explanation given for making the trip in the night time is that they anticipated a heavy snowfall during the night that might possibly make the roads impassable for the auto stage the following day. We have no information at this time that would indicate speeding or reckless driving at the time of the accident, and the explanation given is that the accident was occasioned by the steering gear becoming locked. Just what this defect consisted of has not been explained. Our efforts to obtain a written report of the accident from Mr. Walter Shaw (the owner of the stage) have not been successful to date. The details reported herein were, in the absence of Mr. Shaw, procured from Mr. Harry McDonald who is the husband of one of the injured passengers.

VI. MUSEUM, NATURE GUIDE WORK, EDUCATIONAL WORK.

A very large bull buffalo which had become ugly and unmanageable was shot on November 15th. The animal was in the buffalo corral at Mammoth. The skin was removed, after which the carcass was allowed to remain where it was.

For the purpose of studying, sketching and securing moving pictures of the animals which might come to feed on the carcass, I arranged a small tent-blind of special design about fifty feet away in a fringe of willows. For several days the only visitors to the meat were magpies. Then came a few ravens, very cautiously at first, and an eagle. Several days were spent in the blind and, as the month ended, a coyote came to the meat for the first time while I was in the blind.

Considerable attention was given the hot springs formations at Mammoth, owing to a remarkable stoppage of the overflow from Jupiter Terrace first noticed about the 10th of the month.

Hymen Terrace was the most active of all, being at least equal to normal. The activity in general diminished as one traveled toward Jupiter from Hymen Terrace. Jupiter was about three feet below normal or the overflowing point, the bottom of the basin or crater being covered by only one to one and a half feet of water. The face of the terrace was frozen over and absolutely dry. A remarkable feature observed was a clear and beautiful violet tint which at this time replaced much of the usual creams and buffs of the bowls.

By the 29th of the month a considerable stream of water was again flowing over this terrace, and the violet tints seemed to have

again given place to the former creamy and buffy colors.

The Park Naturalist recently discovered and promptly purchased a coyote which is docile, tractable, playful and affectionate to a very exceptional degree even for a hand-reared animal of this species. The coyote has the reputation of being a particularly untamable beast. The one in question was dug out of a den at a tender age, and evidently has never had any but the kindest attention. He is fond of being petted and carried about. Whining, tugging at his leash, wagging his tail -- in his impatience for one to come within fawning distance -- he is, in all his actions, quite like a thoroughly domesticated and somewhat "spoiled" dog. It is thought that this unusual individual of a species so characteristic of the Park will prove a rare attraction to tourists.

VII. MISCELLANEOUS.

Medical Service

Dr. J. M. Wolfe, Park Physician, after an absence of about a month, returned to duty around the first of November. He reports having made 17 calls on National Park Service residents and received 23 office callers.

Religious Services

On the evenings of Nov. 6th, 13th and 20th (Thursdays) the Rev. Geo. C. Keebler of Livingston held English Lutheran services in the Lodge Room of the Post Canteen. On the evening of Nov. 9th (Sunday) and morning of the 23rd (Sunday) Rev. Wm. Friend Day, Episcopal Minister for this district, held services in the Lodge Room.

School

Four boys and four girls are attending school at headquarters, which is supported by private subscription. It is anticipated that at least 3 more pupils will be added during the month of December.

Other Matters of Interest

The last of the crews employed at Old Faithful and Canyon Hotels arrived at Mammoth on the 15th, and the crew from the Canyon Camp disbanded and moved out on the 21st. All woodcutting operations for the season were concluded on the 26th and the crew moved out on the 27th.

The horses from the South District were brought to headquarters on the 15th and from the Western Supervisory Territory on the 21st, and were afterwards promptly removed to the Yancey Hay Ranch where they will

be fed and sheltered during the winter season. All ranger transportation in the Central, Southern and Western areas of the park is now limited to skis and snowshoes.

Train service between West Yellowstone and Ashton was concluded on the 25th and the winter schedule, consisting of 4 mixed trains each week - Sunday, Monday, Wednesday and Friday - between Livingston and Gardiner became effective on the 26th.

Cordially yours,

LEROY HILL
Acting Superintendent.

The Director,
National Park Service,
Dept. of the Interior,
Washington, D.C.

AEM

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.

MONTHLY METEOROLOGICAL SUMMARY.

Station, YELLOWSTONE PARK, WYO.; month, NOVEMBER, 1924., 19

Date.	TEMPERATURE. (Degrees Fahrenheit.)			Precipitation. (In inches and hundredths.)	Character of day.	Sunshine percentage.	ATMOSPHERIC PRESSURE. (Reduced to sea level; inches and hundredths.)	
	Max.	Min.	Mean.				Mean.	Highest.
	52	37	44	0	Clear	73	30.24	30.74
	59	37	48	0	Clear	97		17
	58	40	49	0	PtClay	75	29.41	9
	50	28	39	.25	Cloudy	0		
	34	22	28	.05	PtClay	43		
	32	18	25	T	PtClay	30		
	34	24	29	.03	Cloudy	27		
	34	22	28	.11	PtClay	44		
	37	32	34	.23	Cloudy	0		
	35	7	21	.25	Cloudy	0		
	21	10	16	.13	Cloudy	2		
	19	-1	9	.30	PtClay	61		
	20	-2	9	T	PtClay	54		
	25	11	18	T	Cloudy	0		
	37	21	29	.01	PtClay	59		
	40	12	26	0	Clear	100		
	39	12	26	0	Clear	100		
	45	19	32	0	Clear	100		
	36	27	32	.01	Cloudy	0		
	43	23	33	.20	Cloudy	24		
	42	20	31	.19	Cloudy	0		
	42	21	32	.16	Cloudy	42		
	26	13	20	.19	Cloudy	1		
	29	8	18	0	Clear	100		
	28	17	22	.12	Cloudy	0		
	25	6	16	0	PtClay	58		
	32	19	26	0	Cloudy	0		
	36	13	24	0	Clear	99		
	36	15	26	0	Clear	100		
	37	11	24	0	Clear	100		
	36.1	18.1	27.1	2.23		46		

TEMPERATURE.		ATMOSPHERIC PRESSURE.	
Highest	59	Mean	30.24
Greatest daily range	28	Highest	30.74
Least daily range	5	lowest	29.41
			17
			9

TEMPERATURE.	
Highest	59
Greatest daily range	28
Least daily range	5

Mean for this month in	
1871	80
1872	81
1873	82
1874	83
1875	84
1876	85
1877	86
1878	87
1879	88
Normal for this month	29.3
Absolute maximum for this month for	38
Absolute minimum for this month for	38
Average daily excess (+) or deficiency (-) of this month as compared with the normal	-2.2
Accumulated excess (+) or deficiency (-) since January 1	-472
Average daily excess (+) or deficiency (-) since January 1	-1.4

PRECIPITATION.	
Total this month	2.23
Greatest precipitation in 24 hours	0.41
Snow on the ground at end of month	6.0

Total precipitation this month in	
1871	80
1872	81
1873	82
1874	83
1875	84
1876	85
1877	86
1878	87
1879	88
Normal for this month	1.44
Excess (+) or deficiency (-) of this month as compared with the normal	40.79
Accumulated excess (+) or deficiency (-) since January 1	-1.00

MEAN RELATIVE HUMIDITY (Percentage).	
6 a. m.	75
noon	62
6 p. m.	67

WIND.	
Prevailing direction	South
total movement	5446
average hourly velocity	9.0
maximum velocity (for five minutes)	40
on	4

WEATHER.	
Number of days, clear	9
partly cloudy	9
cloudy	13
on which .01 inch, or more, of precipitation occurred	15

MISCELLANEOUS PHENOMENA (dates of).	
Aurora	0
hail	0
sleet	0
fog	0
thunderstorms	0
* Frost: light	---
heavy	---
killing	---

Note.—"T" indicates trace of precipitation.

Station frost is not recorded after the occurrence of "killing," except in Florida and along the immediate coast of the Gulf of Mexico.

E. E. Fletcher, Meteorologist.

Weather Bureau.